

CA

SOLOV'YEVA, V. I.

12

Metabolic processes and protection of ripening meat.  
V. I. Solov'yeva. *Myasnye Industrii S.S.S.R.* No. 2,  
43-4(1982).--Beef was stored at 0, 8-10, and 17°, resp.,  
and analysed daily organoleptically and for volatile fatty

acids, volatile reducing substances, total N nucleotides,  
aromatic acid, free purine, and hypoxanthine. The data  
show that organoleptic and chem. changes run parallel  
optimum ripening occurred in 10 days at 0°, 4 days at 8  
10°, and 3 days at 17°. The use of ultraviolet light to in-  
hibit organism while ripening quickly at 17° is mentioned  
in connection with rapid turnover. M. M. Piskun

KHAN, O.A.; SOLOV'YEVA, V.I.

Anodic behavior of lead some other metals and alloys in a  
lead nitrate solution. Zhur.prikl.khim. 34 no.8:1793-1799  
Ag '61. (MIRA 14:8)

1. Altayskiy gorno-metallurgicheskiy nauchno-issledovatel'skiy  
institut AN KazSSR.  
(Lead nitrate)

SOLOV'YEVA, V.I.; KHAN, O.A.

Electrolytic refinement of bismuthic lead in the nitric acid  
electrolyte. Zhur.prikl.khim. 35 no.2:310-317 P 162.  
(MIRA 15:2)

(Lead-bismuth alloys) (Bismuth-Electrometallurgy)

SOLOV'YEVA, V.I.; KILAN, O.A.

Investigating the process of the electrolytic refining of lead in a  
nitric acid electrolyte. Trudy Ak. GIMII AN Kazakh. SOR 14:75-85  
'63. (MIRA 16:9)

(Lead--Electrometallurgy) (Electrolytes)

SOLOV'YEVA, V I

1-RM2

15

Structure of large atmospheric showers at sea level.  
A. T. Abrosimov, V. I. Zaitsev, V. I. Solov'yeva, G. B.  
Christiansen, and P. S. Chikis. Bull. Acad. Sci. U.S.S.R.  
Phys. Ser. 6, 610-18(1955)(English translation) See C.A.  
-50, 7017d.

RM2  
my

ABROSIMOV, A.T.; ZATSEPIN, V.I.; SOLOV'YEVA, V.I.; KRISTIANSEN, O.B.;  
CHIKIN, P.S.

Structure of extensive air showers at sea level. Izv.AN SSSR. Ser.  
fiz.19 no.6:677-680 N-D '55. (MIRA 9:4)

1.Fizicheskiy institut imeni P.N.Lebedeva Akademii nauk SSSR i  
Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.  
(Cosmic rays) (Nuclear physics)

Card 1/1            Pub. 146-18/28

Author            : Abrosimov A. T., Bednyakov A. A., Zatsepin V. I., Nechin Yu. A.,  
                   Solov'yeva V. I., Khristiansen G. B. and Chikin P. S.

Title             : Study of structure of broad atmospheric showers at sea level (Letter  
                   to the editor)

Periodical        : Zhur. Eksp. i Teor. Fiz., 29, No 5, 693-696, 1955

Abstract          : A detailed study was carried out in Moscow during the summer of 1953  
                   of the spacial distribution of various components of broad atmos-  
                   pheric showers at short distances from the shower axis by using the  
                   method of correlated hodoscopes. The preliminary results of these  
                   studies are presented in graphs. Indebted to G. T. Zatsepin and N.  
                   A. Dobrotin for discussions and to G. V. Bogoslavskiy, B. V. Subbotin  
                   and M. S. Tulyankina for assistance in measurements. Five references.

Institution       : --

Submitted        : May 3, 1955

SOLOV'YEV, V. I.

Investigation of the structure of wide atmospheric cascade  
ray showers at sea level. A. P. Afanas'ev, A. V. Rodina-  
kov, V. I. Zaitseva, Yu. A. Kochin, V. I. Pavlov, G. B. R.  
Khrushchev, and P. G. Chumachenko. *Phys. High Energy Phys.*  
20, 693-6 (1976); *Soviet Phys. High Energy Phys.* 20, 693-6 (1976) (Eng-  
lish translation). - The spatial distribution of the electron  
components of wide atmospheric cascade ray showers at sea level  
is very different from that expected on the basis of the elec-  
tron-photon picture developed for showers higher in the  
atm. Data obtained at sea level, and in the French Alps,  
with a Ne cell gaseous counter, are shown.

P. H. B.



OUTBOUND:

Andriyev, V. Y. *Abstracts of the 1954-1955*  
 collection, No. 17. *Abstracts of the 1954-1955*  
 collection, No. 17. *Abstracts of the 1954-1955*

TITLE:

The structure of the lateral distribution of showers at sea level. *Struktura razbroska atmosferychnykh dazhdy na morskoy*  
 morskoy

PERIODICAL:

*Zhurnal eksperimental'noy i teoreticheskoy fiziki*, 1958,  
 vol. 34, No. 2, pp. 677-689 (689)

ABSTRACT:

This paper investigates the lateral distribution of electrons, nuclear active and nuclear passive particles in extensive air showers containing from  $4 \cdot 10^4$  to  $4 \cdot 10^5$  particles at sea level by means of correlated hodoscopes. These measurements were carried out from April to May of 1954 in Moscow. The authors used the hodoscopes R-20 of M. N. Korabely. At first the measuring device is discussed, which gave a sufficiently exact distribution of the density of the charged particles near the axis of any registered shower. By means of these data it is possible to determine the individual properties of the shower: - the position of its axis and the number of the particles or zero approximation of the position of the

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NOV/56-310-4/01

The structure of the extensive atmospheric showers at sea level

axis the center of the region of maximal density of particle flux was taken. Also the determination of the second approximation is discussed in a few words, but the use of this second approximation is practically not necessary. The second characteristic of the shower is the total number  $N$  of the particles, was found after determining the position of the axis. Therefore the total number of the particles in the central region of the shower was used as a standard of the total number of particles. The experimental data concerning the spatial distribution of all charged particles may be approximated by the function  $kNr^{1/n}e^{-r/R}$  with  $R = (60 \pm 6)$  m for the region  $1 \ll r \leq R(n-1)$  and by the exponential function  $k_1 e^{-r/R}$  for the region  $r \gg R(n-1)$  with  $n = 2.6 \pm 0.1$ . The coefficients  $K$  and  $k_1$  are found from the normalizing conditions of the function of spatial distribution. The hodoscopic device was also used for the determination of the number of the registered extensive showers with a fixed number  $N$  of particles. The energy flux of the shower is concentrated in a small region possessing a small radius of the order of several metres from the axis of the extensive air shower. The whole of the experimental facts may be explained by the idea of equilibrium

NY 60-34-2 A-61

## The Structure of the Extensive Atmospheric Showers at Sea Level.

between the electron component and the nuclear active component with low energies on one hand and by the energy-flux of the nuclear avalanche (lavina) of the shower core on the other hand. There are 7 figures, 4 tables, and 20 references, 12 of which are Soviet.

ASSOCIATION: Fizicheskiy institut im. P.N. Lebedeva Akademii nauk SSSR  
(Physics Institute imeni P.N. Lebedev, AS USSR)  
Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: December 3, 1957

1. Particles (Airborne)--Measurement    2. Electrons--Distribution  
3. Electrons--Properties    4. Mathematics--Applications

Card 3/3

V.I. Soloveva

GENERAL DESCRIPTION OF THE MOSCOW UNIVERSITY ARRANGEMENT FOR THE STUDY OF  
EXTENSIVE AIR SHOWERS AND PRELIMINARY RESULTS OBTAINED BY IT

S.N. Vernov, G.B. Khristiansen, A.T. Abrosimov, N.N. Goryunov, V.A. Saitriev,  
G.V. Kulikov, Yu.A. Nichin, S.P. Soklov, V.I. Soloveva, K.I. Soloviev,  
Z.S. Sturgalsky, B.A. Khrenov

1. In the late 1957, at the Moscow State University an arrangement was put into operation for multipurpose studies of extensive air showers of cosmic rays.  
2. The arrangement is a complex assembly of simultaneously operating physical instruments (some 5000 Geiger-Muller counters covering an area of over  $100 \text{ m}^2$ , and some 150 ionization chambers of various shapes covering a total area of  $13 \text{ m}^2$ , and a diffusion chamber of area  $0.64 \text{ m}^2$ ) and appropriate electronic equipment and photographic devices to record the instrument readings when an extensive air shower passes through the arrangement. Most of this equipment is located in a specially erected building. Three rooms of this building ( $\sim 60 \text{ sq. m.}$  in area each) have light roofing of not more than  $1.5 \text{ g/m}^2$  and two rooms ( $25 \text{ m}^2$  and  $80 \text{ m}^2$ ) are situated underground at a depth corresponding to 20 and 40 metres water equivalent.

Report presented at the International Cosmic Ray Conference, Moscow, 6-11 July 1959

SOLOVYOVA, V. I.

A STUDY OF ULTRA-HIGH-ENERGY EXTENSIVE AIR SHOWERS  
A.T. Abrosimov, V.I. Solovyeva, G.B. Khristiansen

1. The correlated hodoscope method was applied in a study of showers with the total number of particles  $5 \times 10^6 \leq N \leq 5 \times 10^7$  at sea level.
2. The obtained spatial distribution of electrons, (which are not in equilibrium with the mu-meson component) in the interval  $100 \text{ m} < r < 1000 \text{ m}$  from the axis, is independent of the number of particles in the shower during variation of this number in the given interval. It is difficult to bring into agreement the spatial distribution of electrons at large distances and the theoretical distribution of Nishimura and Kamata for the value of parameter S, for which agreement between experimental and theoretical distributions is observed at small distances from the shower axis.
3. The spatial distribution of mu-mesons obtained in the interval  $300 \text{ m} < r < 1000 \text{ m}$  is well described by the  $r^{-n}$  law ( $n = 2.3 - 0.23$ ) and its form is independent of the number of particles in the shower.
4. The absolute intensity of a shower with the number of particles  $N \geq 10^7$  amounts to  $(1.36-0.2) \times 10^6 \text{ m}^{-2}\text{hr}^{-1}\text{sterad}^{-1}$ .

Report presented at the International Cosmic Ray Conference, Moscow, 6-11 July 1959

SOLOV'YEVA, V. I.

(8)

31517  
S/627/60/002/000/001/027  
D299/D304

3.24.10(1557, 2205, 2705, 2805)

AUTHORS: Vernov, S. N., Kristiansen, G. B., Abramov, A. T.,  
Goryunov, N. N., Dmitriyev, Y. A., Kulikov, G. B.,  
Nechin, Yu. A., Sokolov, S. P. (deceased), Solov'yeva,  
V. I., Solov'yev, K. I., Strugalskiy, Z. S., and  
Khrenov, B. A.

TITLE: General description of the setup used for studying ex-  
tensive air showers and the provisional results ob-  
tained

SOURCE: International Conference on Cosmic Radiation. Moscow,  
1959. Trudy. v. 2. Shirokiye atmosferye livni i kosh-  
kadnyye protsessy, 5-16

TEXT: A complex experimental setup was installed at Moscow State  
University, consisting of a simultaneously operating physical appa-  
ratus plus the corresponding radiotechnical equipment and photo-  
graphical recording devices. The setup incorporates over 5000 Gei-  
ger-Muller counters (forming a hodoscope), about 150 ionization

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General description of the setup...

S/627/519/002/000/001/027  
5299/D301

chambers and a large diffusion chamber. The setup is designed for a comprehensive and simultaneous investigation of all the basic components (electrons and photons, nuclear-active particles and  $\mu$ -mesons) of extensive air showers at sea level. The setup was designed in 2 different configurations: the first at the end of 1957, and the second at the beginning of 1959. Below, only the results obtained by means of the first setup are considered. The setup was located in a special building and in 10 mobile laboratories. The showers were registered by the system of hodoscoped counters. Part of the counters were shielded (those for detecting the nuclear-active particles and the  $\mu$ -mesons) and the other counters were not shielded. The ionization chambers served to determine the lateral distribution of the electron-photon component and of the nuclear-active component. The microstructure of the electron component was studied by means of the diffusion chamber. Special measures were taken to ensure continuous and prolonged operation of the setup. The main units of the setup were automatically controlled, in particular the supply units and the photography system. The operation of the setup (as a whole) was controlled (triggered) by a selection system; in parti-

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General description of the setup ... 3/627/00/002/000/001/027  
2299/0704

cular, the showers were selected in accordance with the density of the electron flow and of the  $\mu$ -mesons. The setup was in operation for about 2500 hours, yielding a large amount of experimental data which are still being processed. The probability theory (Baye's theorem) was used for determining the (x,y)-axes and the number of particles N of the shower; in addition the distribution function  $f(r)$  as well as other distribution functions were determined (r denoting distance). The values of x, y and N were found by means of a special electronic simulator. The density distribution of electrons and mesons was determined by means of formula

$$w(\rho) = \prod_i [1 - \exp(-\rho\sigma_i)]^{n_i} \cdot \exp[-\rho\sigma_i(n_i - n_1)]$$

where  $n_1$  is the number of counters which operate over an area  $\sigma_1$ , and  $n_i$  - the overall number of such counters. The energy E of the electron-photon component was determined by means of ionization  
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General description of the setup ...

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S/027/60/002/000/001/027  
52/05/0104

chambers, shielded with lead (up to 5 cm thick). A very comprehensive picture of the particles and energies was obtained for showers whose axes fell within the system of 128 cubic detection chambers. The setup permits observing the central part of an atmospheric shower, whereby its several layers are simultaneously observed; this corresponds to the individual observation of the electron-photon, nuclearactive and  $\mu$ -meson components. The processed material already yielded a fairly detailed picture of the structure of extensive air showers at sea level. Thus, the lateral distribution of particle flow in the individual showers was ascertained. It was found that the lateral distribution varies (in the 1 to 25 m range) from shower to shower; the average distribution is, in the range of 5 cm to 100 m, as follows:

$$\frac{K_1 N}{r^{0.6}} \quad K_1 = 3,3 \cdot 10^{-3}, 0,05(r < 0,3 \text{ m})$$

$$\rho(r) = \int$$

(cont'd)

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General description of the setup ... <sup>31519</sup>  
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D299/D304

$$\left( \frac{K_2 N}{r} \cdot e^{-\frac{r}{60}} \right), K_2 = 2 \cdot 10^{-3}, 0.3 < r < 100 \text{ m}$$

The lateral distribution of the electron-photon components also fluctuates from shower to shower. At distances smaller than 1.5 m, these fluctuations are particularly sharp. The nuclearactive components also exhibits considerable energy fluctuations. The fluctuations in the high-energy  $\mu$ -mesons were not yet analyzed. The energy of the electron-photon component  $E_{\text{eph}}$  was calculated for a shower with number of particles equal to  $(2.7 \pm 0.2) \cdot N_0$ , where  $0$  is the critical energy for air (72 Mev). The above value was obtained with an accuracy of appr. 30%. It was found that the energy of the nuclearactive component  $E_n \approx (0.5 \text{ to } 1.0) E_{\text{eph}}$ . This value is, however, subject to considerable fluctuations and the experimental data are as yet insufficient to determine the contribution of the

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General description of the setup...

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nuclearactive component in showers. In addition, the above-men-  
tioned fluctuations severely delimit the choice of a theoretical  
model for the development of showers. Particular attention was de-  
voted to the structure of the shower in the immediate vicinity of  
its axis, where the particles of highest (for the particular show-  
er) energy should be concentrated. This led to the discovery of a  
new effect: Groups of particles (from 4 to 20) travel in narrow  
beams (not exceeding 8 cm in diameter) in the neighborhood of the  
axis (or along the axis itself), whereby their lateral distribution  
shows that the beams are not due to Poisson fluctuations. The new  
effect can be explained as follows: Either the beam is the core of  
a "young" electron-photon shower which originates from a high-ener-  
gy  $\pi^0$ -meson at a certain distance from the apparatus, or the beam  
consists of  $\mu$ -mesons. These two possibilities are discussed. The  
observed irregularity in the lateral distribution of  $\mu$ -mesons in  
the vicinity of the shower axis might be related to the new effect.  
There are 6 figures and 2 tables.

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General description of the setup ... 3/001/001/001/001/027  
2299/0004  
ASSOCIATION: Nauchno-issledovatel'skiy institut yadernoy fiziki  
MSU, Moskva (Scientific Research Institute of Nuclear  
Physics Moscow State University, Moscow)

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SOLOV'YEVA, V.I.

31522  
S/627/60/002/000/004/027  
D299/D304

3.8410 (1559, 2205, 2705)

AUTHORS: Kulikov, G. V., Nesterova, N. M., Nikol'skiy, S. I., Solov'yeva, V. I., Khristiansen, G. B., and Chudakov, A. Ye.

TITLE: Number spectrum of extensive air showers at altitudes of 200 and 3860 m above sea level

SOURCE: International Conference on Cosmic Radiation. Moscow, 1959. Trudy. v. 2. Shirokiye atmosferynye livni i kas-kadnyye protsessy, 87-91

TEXT: Number spectra of extensive air showers were investigated in detail at the Physics Institute of the AS USSR and at Moscow State University. The spectra were investigated at an altitude of 3860 m and at sea level. Those at sea level were studied over a range  $N = 4 \cdot 10^3$  to  $3 \cdot 10^7$ . For showers with small  $N$  ( $10^3$  to  $5 \cdot 10^4$ ), the statistical method was used. The apparatus incorporated hodoscoped Geiger-Müller counters, whose disposition is shown in a figure. The experiments yielded the number of anti-coincidences  $n$  per unit time

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D299/D304

Number spectrum of ...

for counters of different  $\sigma$ ; ( $\sigma$  varied between 0.4 and  $1.65 \cdot 10^{-2} \text{ m}^2$ ). By comparing the measurements and the calculations, the integral spectrum of the showers was obtained:  $F(>N) = 2.5 \cdot 10^{-3} N^{-(1.45 \pm 0.03)}$   $\text{cm}^{-2} \text{sec}^{-1}$ , with  $N = 4 \cdot 10^3$  to  $10^5$ . For large  $N$ , the spectrum was obtained by individual study of the showers, at sea level. For this purpose, the majority of the counters were disposed in a circle. The position of the axis and the number of particles in each shower were determined by means of the electronic computer "Strela". Thereupon the integral spectrum was found for  $N = 8 \cdot 10^4$  to  $8 \cdot 10^5$ , viz.

$$F(>N, 0) = (1.95 \pm 0.14) \cdot 10^{-10} \left( \frac{N}{10^5} \right)^{-1.5 \pm 0.1} \text{cm}^{-2} \text{sec}^{-1} \text{sterad}^{-1}$$

Both series of measurements coincide in the range  $N \approx 10^5$ . In order to determine the absolute number of extensive air showers in the

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D299/D304

Number spectrum of ...

range  $N > 10^7$ , the apparatus was divided into 4 groups of counters. Further, extensive air showers were studied at an altitude of 3860 m. The apparatus was controlled by photomultipliers, recording the Cherenkov radiation [Abstractor's note: See article on p. 47, this Trudy.]. The shower axis and the number of particles were determined by means of a simulator. Showers with  $N = 2 \cdot 10^4$  to  $10^7$  were investigated. From the obtained results, the integral spectrum of showers with  $N = 2.5 \cdot 10^4$  to  $1.3 \cdot 10^7$  was constructed, viz.

$$F(>N, 0) = (4,6 \pm 1,4) \cdot 10^{-11} \left( \frac{N}{10^6} \right)^{-(1,60 \pm 0,15)} \text{ cm}^{-2} \text{ sec}^{-1} \text{ sterad}^{-1}$$

The absorption length  $\lambda$  of showers was also determined; for showers with  $N 10^5$ ,  $\lambda = 156 \pm 22 \text{ gm/cm}^2$ . There are 4 figures and 2 Soviet-bloc references.

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Number spectrum of ...

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D299/D304

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR (Physics Institute im. P. N. Lebedev AS USSR); Nauchno-issledovatel'skiy institut yadernoy fiziki MGU (Scientific Research Institute of Nuclear Physics Moscow State University)

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3,2410(2205,2705,2905)

31523  
S/627/60/002/000/005/027  
D299/D304

AUTHORS: Abrosimov, A. T., Basilevskaya, G. A., Solov'yeva, V.I.,  
and Khristiansen, G. B.

TITLE: Study of extensive air showers of ultrahigh energies

SOURCE: International Conference on Cosmic Radiation. Moscow,  
1959. Trudy. v. 2. Shirokiye atmosferynye livni i kan-  
kadnyye protsessy, 92-100

TEXT: Showers with number of particles ranging from  $10^6$  to  $10^8$ ,  
were investigated by the apparatus of Moscow State University. It  
is noted that the experiments conducted by the authors yielded,  
in conjunction with the experiments conducted by V. A. Dmitriyev  
et al. (Ref. 9: ZhETF, 36, 992, 1959), several new results con-  
cerning the energy characteristics of the electron-photon and mu-  
meson components (Ref. 10: ZhETF, in print). The apparatus con-  
sisted of 10 mobile laboratories with 2 types of detectors: of  
charged- and of penetrating particles; it permitted determining  
the position of the axis and the number of particles of the shower,

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Study of extensive air ...

provided the axis fell within the limits of the apparatus and the number of particles was sufficiently large. After the axis was found, the number of particles  $N$  was determined by the formula

$$N = \frac{1}{n} \sum_{i=1}^n N_i$$

+

where

$$N_i = \rho(r_i) \varphi(r_i)$$

$$\varphi(r_i) = r_i e^{\frac{r_i}{60}} / 2 \cdot 10^{-3}; r_i \leq 96 \text{ m}$$

$$\varphi(r_i) = r_i^{2,6} / 0,6; r_i > 96 \text{ m}$$

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D299/D304

Study of extensive air ...

$\rho(r_1)$  being the density at the 1-th observation point (at a distance  $r$  from the axis). The apparatus recorded 1000 showers during a period of operation of 1420 hours. For showers with  $N \geq 1 \cdot 10^7$ , the probability of recording was nearly 100%. During 1484 hours of operation, 75 showers with  $N \geq 10^7$  and 8 showers with  $N \geq 3 \cdot 10^7$  were recorded over an area of  $7 \cdot 10^4 \text{ m}^2$ ; this yielded the following absolute intensity values:

$$I(\geq 10^7) = (1.36 \pm 0.2) \cdot 10^{-6} \text{ m}^{-2} \text{ hour}^{-1} \text{ sterad}^{-1}$$

$$I(\geq 3 \cdot 10^7) = (1.24 \pm 0.43) \cdot 10^{-7} \text{ m}^{-2} \text{ hour}^{-1} \text{ sterad}^{-1}$$

On this basis, the exponent  $\gamma$  of the number spectrum was calculated,  $\gamma = 2.0 \pm 0.35$ . For constructing the lateral distribution

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S/627/60/002/000/005/027

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Study of extensive air ...

function, 200 of the more dense showers were used, with  $N_{25} \cdot 10^7$ ; the lateral-distribution functions of the electron and meson components were constructed. The values for the absolute intensity of showers, obtained by the authors, agree with the results obtained by T. E. Cranshaw et al. (Ref. 5: Phil. Mag., 3, 377, 1958) and by G. Clark et al. (Ref. 7: Nature, 180, 406, 353, 1957; Nuovo Cim. Suppl., 8, 623, 1958). The authors compared the experimental lateral-distribution functions of electrons with the theoretical values obtained on the basis of cascade shower theory. After modifying the values of the constants  $\beta$  and  $t_0$  (entering the formulas of cascade theory), good agreement was found between theoretical and experimental values. The authors conclude that in ultrahigh-energy showers either no equilibrium exists between the electron-photon and the nuclearactive components in the lower atmospheric layers, or that the lateral distribution of electrons is not only determined by Coulomb scattering, but also by angular deviations of particles during the nuclear-cascade processes. There are 5 figures and 17 references: 8 Soviet-bloc and 9 non-Soviet-bloc. The

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Study of extensive air ...

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4 most recent references to the English-language publications read as follows: T. E. Cranshaw, J. F. de Beer, W. Galbraith, N. A. Porter, Phil. Mag., 3, 377, 1958; T. E. Cranshaw, J. F. de Beer, W. Galbraith, A. M. Hillas, Phil. Mag., 3, 81, 1958; J. Nichimura, K. Kamata, Progr. Theor. Phys., 6, 1958; T. E. Cranshaw, W. Galbraith, Phil. Mag., 2, 797, 804, 1957.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR  
(Physics Institute im. P. N. Lebedev AS USSR); Mos-  
kovskiy gosudarstvennyy universitet (Moscow State  
University)

+

Card 5/5

SOLOV'YEVA, V.I.

3.2410 (1559, 2205, 1705)  
 31526  
 S/627/60/002/000/008/027  
 D299/D305  
 (4)  
 AUTHORS: Vernov, S. N., Goryunov, N. N., Dmitriyev, V. A., Ku-  
 likov, G. V., Nechin, Yu. A., Solov'yeva, V. I., Stru-  
 gal'skiy, Z.S., and Khristiansen, G. B.

TITLE: Study of lateral-distribution function of charged par-  
 ticles and of the energy density of the electron-photon  
 component of extensive air showers

SOURCE: International Conference on Cosmic Radiation. Moscow,  
 1959. Trudy. v. 2. Shirokiye atmosferynye livni i kas-  
 kadnyye protsessy, 117-122 +

TEXT: The data obtained by means of the diffusion chamber and the  
 hodoscoped counters permit determining the particle distribution in  
 the neighborhood of the shower axis as well as at large distances  
 from it. These data can be used for determining the number of par-  
 ticles and the position of the axis to an accuracy of approximately  
 1 m by means of the hodoscoped counters, and to an accuracy of se-  
 veral centimeters if the axis lies within the limits of the diffu-  
 Card 1/5

Study of lateral-distribution ...

S/627/60/002/000/009/027  
D299/D305

nion chamber. The electron-photon component at large distances from the axis was studied by means of large ionization chambers, shielded with lead. During 1000 hours of operation, 28 cases were recorded of the axis (of showers with number of particles  $N \geq 10^5$ ) passing through the core detector. All these showers were investigated in detail with respect to distribution and energy of particles. The cases most favorable for analysis are those, in which the shower axis lies in the diffusion chamber. In all, 7 such cases were recorded. For each of these showers, the lateral-distribution function of particle density was constructed for distances ranging from 5 cm to 1 m from the shower axis. It was found that the form of the distribution function varied from shower to shower in the core region. In that region, a peculiar feature of particle distribution was observed, namely a narrow beam (4 cm in diameter) of particles, consisting of a large number (4 to 15) of particles with collinear tracks. From data obtained by means of the hodoscoped counters and knowing the position of the shower axis, it is possible to construct the distribution function of charged particles up to a distance of  $r = 25$  m. from the axis, for each individual

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Study of lateral-distribution ...

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S/627/60/002/000/008/027  
D299/D305

4

shower. Then the experimental distribution functions were compared with the theoretical functions of Nishimura and Kamata. The results of the comparison are shown in a table. A difference was noted in the form of the distribution of the energy flux of the electron-photon component in the individual shower at a distance of  $r \sim 1$  m, and at large distances from the axis; this is due to local fluctuations in the form of the energy distribution in the core. In each of the investigated showers, the energy flux of the electron-photon component was found within a radius of 25 m; it turned out that the electron-photon component energy-flux was stronger (on the average) in showers with small  $s$ , than in showers with large  $s$  ( $s$  being the "age parameter"). The system of counters permitted recording showers with number of particles  $N = 10^4$  to  $10^7$ . The data yielded by the diffusion chamber were used for constructing the distribution function for distances  $r < 1$  m from the shower axis. The conclusion was reached that the form of the electron-photon energy distribution-function does not depend on the number of particles in the shower. Therefore, all the data were referred to a shower with same  $N$ , and the average energy-density distribution.

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Study of lateral-distribution ...

31526  
S/627/60/002/000/008/027  
D299/D305

tion constructed. Approximating this distribution by a power law of type  $r^{-n}$ , one obtains for the exponent  $n$  the following values (as a function of the distance  $r$  from the axis):

$n = 1,2 \pm 0,2, \quad 0,1 < r < 1 \text{ m}$   
 $n = 1,5 \pm 0,2, \quad 1 < r < 10 \text{ m}$   
 $n = 2,0 \pm 0,3, \quad 10 < r < 60 \text{ m}$   
 $n = 2,6 \pm 0,2, \quad 60 < r < 1000 \text{ m}$

Further, the mean energy per electron was obtained from experimental and theoretical values (based on the cascade shower theory) of the mean energy as a function of  $r$  showed a discrepancy which can be removed by taking into account the effect of nuclear scattering. The experimental values permit calculating the energy of the

Card 4/5

Study of the lateral-distribution ...  
electron-photon component, viz.  $E_{\text{eph}} = 2.5 \text{ SN}$ , where  $S$  denotes the  
mean energy loss per unit of depth  $t$ . There are 2 figures, 1 table  
and 6 references: 5 Soviet-bloc and 1 non-Soviet-bloc. The referen-  
ce to the English-language publication reads as follows: J. Nishi-  
mura, K. Kamata. Suppl. Theor. Phys., no. 6, 1958.

31525  
S/627/60/002/000/008/027  
D299/D303

Card 5/5

ABRASIMOV, A.T.; BAZILEVSKAYA, G.A.; SOLOV'YEVA, V.I.; KRISTIANSEN, G.B.

Extensive air showers involving ultrahigh energies. Zhur. eksp.  
i teor. fiz. 38 no.1:100-107 Jan '60. (MIRA 14:9)

1. Institut yadernoy fiziki Moskovskogo gosudarstvennogo universi-  
teta i Fizicheskiy institut im. P.N.Lebedeva AN SSSR.  
(Cosmic rays)

BOLOVINA, V. I., KHRISTIANSEN, G. B., BELINAYOVA, J. F., KRASNOSEVICH, V. G.,  
DIMITRIYEV, V. A., ARKUSOV, A. I., NISCHEN, YU. A., KHRANOV, B. A., KULIKOV, B. B.

"The Structure of Extensive Air Showers at Sea Level."

report submitted for the Intl. Conf. on Cosmic Rays and Earth Storm (ICRASP)  
Kyoto, Japan 4-15 Sept. 1961.

27183

S/056/61/041/002/004/028  
B102/B205

3.2410

AUTHORS:

Vernov, S. N., Solov'yeva, V. I., Khrenov, B. A.,  
Khristiansen, G. B.

TITLE:

Fluctuations of the muon flux in extensive atmospheric  
showers

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41,  
no. 2(8), 1961, 340 - 353

TEXT: The study of fluctuations of the muon flux in extensive atmospheric showers is very interesting, since the fluctuations accompanying the formation of avalanches of high-energy nuclear-active particles in the atmosphere, as well as the applicability of the various models of shower formation can be estimated from their character. This article gives a detailed presentation of the results of an investigation of muon-flux fluctuations in extensive atmospheric showers, which were carried out with a special device for comprehensive studies of such showers, made available by Moskovskiy gosudarstvennyy universitet (Moscow State University). First, the authors give a detailed description of the experi-

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27183

S/056/61/041/002/004/028  
B102/B205

Fluctuations of the muon flux

mental arrangement which used numerous Geiger-Müller counters in hodoscopic arrangement. Fig. 2 shows a muon detector. Detectors of this type, used for measurements on the earth surface, had a total area of  $4.75 \text{ m}^2$ ; at a depth of 20 m water equivalent, it was  $3.2 \text{ m}^2$ , and at 40 m water equivalent,  $6.3 \text{ m}^2$ . The arrangement was designed in such a way that six-fold coincidences could be recorded. Showers with  $N > 10^5$ , in which the numbers of muons with  $E > 4 \cdot 10^8 \text{ ev}$  were determined, were examined more closely. In order to eliminate the nuclear-active effect, only the records of those detectors were taken into account, which were more than 50 m away from the shower axis. The arrangement made it possible to measure the total number of shower particles and the number of muons in the shower simultaneously. The showers investigated were grouped as follows:

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S/056/61/041/002/004/028  
B102/B205

Fluctuations of the muon flux...

A - Detectors on the earth surface

Detectors

Detectors B

$$\begin{cases} N = (2 - 5) \cdot 10^6 \\ N = (5 - 10) \cdot 10^6 \\ N \geq 10^7 \\ N = (2 - 4) \cdot 10^6 \\ N \geq 4 \cdot 10^6 \\ N = (1 - 2) \cdot 10^6 \\ N = (2 - 4) \cdot 10^6 \\ N \geq 4 \cdot 10^6 \end{cases}$$

The distribution of events with respect to the ratios  $q/p$  ( $q$  - number of recorded muons,  $p$  - average number of muons to be expected) for the groups (A:  $N \geq 5 \cdot 10^6$ ; B:  $N \geq 4 \cdot 10^6$ ; C:  $N \geq 4 \cdot 10^6$ ) is given in a table. Conclusions: The slight fluctuations of the muon flux in showers with a given number of particles, which were observed experimentally, contradict the conception of the development of extensive air showers proposed by T. E. Cranshaw, and A. M. Hillas in a report delivered at the International Conference on Cosmic Particles. The fact that the experimentally

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S/056/61/041/002/004/028  
B102/B205

Fluctuations of the muon flux...

observed fluctuations of the muon flux do not exceed the theoretically predicted fluctuations (theory takes into account only fluctuations at the altitude at which the primary shower-producing particle undergoes its first interaction) corroborates theory. Calculations show that in the case of a shower developing without fluctuation, the form of distribution with respect to the muon number  $n$  in a shower with a given number of

particles is highly sensitive to the quantity  $\epsilon = (\Lambda + B)/\lambda - 1$ . Since  $\Lambda$  and  $B$  are known, the value of  $\epsilon$  can be estimated from the form of distribution with respect to  $n$ . ( $\lambda$  is the interaction mean free path of

the ultrahigh-energy particles releasing the showers. In order to obtain the exact distribution of muon fluxes, it is necessary to improve the experimental conditions. The authors thank I. P. Ivanenko for a discussion, and K. I. Solov'yev, V. Sokolov, Ye. Shein, V. Putintsev, I. Vasil'chikov, V. Nazarov, G. Degtyareva, N. Proshina, and I. Massal'skaya, co-workers of MGU, for assistance. There are 4 figures, 4 tables, and 8 references: 7 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Institute of Nuclear Physics of Moscow State University)  
Carl 4/5



Fluctuations of the muon flux...

47263

S/056/61/041/002/004/028  
B102/B205

versity)  
SUBMITTED: March 13, 1961  
Legend to the Table: (1), (3), (6): Experimental distributions;  
(2), (4), (7): distribution to be expected from the formula

$$\sum_{q=0}^{p/3} W(q), \quad (\text{для } q/p = 0 \div 1/3),$$

(2)

$$\sum_{q=p/3}^{2p/3} W(q) \quad (\text{для } q/p = 1/3 \div 2/3), \text{ и т. д.}$$

(8): distribution to be expected from the factor given in column 5 and from the statistical fluctuations. The last line but one gives  $q/p$  of all events.

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SOLOV'YEVA, V. I.

12050

S/040/62/026/005/014/022  
B102/B104

3.2410 (2205, 2705, 2805)

AUTHORS: Vernov, S. N., Khristiansen, G. B., Belyayeva, I. P.,  
Dmitriyev, V. I., Kulikov, G. V., Mechin, Yu. A.,  
Solov'yeva, V. I., and Khrenov, B. A.

TITLE: The primary cosmic-ray component at superhigh energies and  
some peculiarities of its interaction with nuclei of air  
atoms

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya,  
v. 26, no. 5, 1962, 651-657

TEXT: The paper is a report on experiments with the Moscow University  
large apparatus (area  $4 \cdot 10^4 \text{ m}^2$ ) for comprehensive studies of extensive  
air showers induced by high-energy cosmic particles. The charged-particle  
detectors (Geiger counters in hodoscope arrangement) cover an area of  
 $110 \text{ m}^2$ , the muon detectors (2-3 counter layers shielded with lead and iron,  
in hodoscope arrangement) more than  $12 \text{ m}^2$ ,  $6.3 \text{ m}^2$  of which are under

Card 1/3

The primary cosmic-ray component ...

5/048/62/026/005/014/022  
B102/B104

40 m water equivalent. The nuclear-active-particle detectors form a system of 128 ionization chambers ( $8 \text{ m}^2$ ) shielded by lead and graphite filters. The number of muons produced in charged-pion decay was estimated (the pions were assumed to be formed in gamma-quantum photoeffect on nuclei of air atoms):  $N_{\mu}^{\pi}(E) \leq \epsilon_0 E_0 / 1.8(1-\alpha)E$ ,  $\alpha \leq 0.5$ ,  $\epsilon_0 < 10^{-3}$ ; for  $E_0 \sim 10^{16} \text{ ev}$  and  $E_{\mu} = 10^{10} \text{ ev}$  ( $\alpha = 0.5$ ),  $N_{\mu}^{\pi}(10^{10}) < 10^3$ . The number  $N_{\mu}^n$  of muons in nuclear showers was measured. For showers with  $N = 7 \cdot 10^6$  a mean number of  $8 \cdot 10^4$  muons with  $E > 10^{10} \text{ ev}$  is to be expected. The spatial muon flux distribution was determined for these two types of showers ( $\epsilon_{\mu}^n$  and  $\epsilon_{\mu}^{\pi}$ ). In the case of a simple model of air shower production (Suppl. Nuovo Cimento, 2, 649, 1958), an analysis of the experimental data yields  $N = k_0 E_0 \exp(-x + x_0) / \Lambda$ ;  $E_0$  is the energy of the primary particle,  $x_0$  is the depth of its first interaction,  $x = x_0 + \Delta x$ ,  $\Delta x = 2 \log E_0$  ( $x$  - depth of observation),  $N$  is the total number of

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The primary cosmic-ray component ...

3/045/62/026/005/014/022  
B102/3104

shower particles; the number of muons  $N_\mu = k E_0^\alpha$ ;  $\Lambda = 200 \text{ g/cm}^2$ ,  
 $B = 30 \text{ g/cm}^2$  and  $\alpha = 0.8 \pm 0.1$ . If the primary energy spectrum has the  
 shape  $A E_0^{-(1+\alpha)} dE_0$ , at fixed  $N$  the  $N_\mu$  distribution has the shape  
 $1/\left(\frac{1+B}{\Lambda} - \gamma - 1\right) dN_\mu$ ,  $\Lambda$  being the mean free path with respect to inter-  
 action. Comparison between experiment and theory yields  $\Lambda = (85 \pm 5) \text{ g/cm}^2$ ,  
 as an upper limit. For charged muons their energies ( $E_\mu$ ) and numbers  
 ( $n_\mu$ ) were measured and calculated for several altitudes  $H$ ;  $W$  is the  
 probability for a charged pion produced at  $H$  decays without interacting  
 with an air nucleus. The results indicate that in  $\sim 3\%$  of all cases  
 nuclear interaction is accompanied by a production of narrow beams of  
 great numbers of charged pions. There are 8 figures.

Card 3/4

37551

S/048/62/026/005/015/022  
B102/B104

3,2410 (2205, 2705, 2805)

AUTHORS: Belyayeva, I. F., Solov'yeva, V. I., Khrenov, B. A.,  
and Khristiansen, G. B.

TITLE: Extensive air showers induced by high-energy photons

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya,  
v. 26, no. 5, 1962, 658-660

TEXT: Photon-induced extensive air showers (e.a.sh.) (Nuovo Cimento 17,  
625, 1960) must differ from heavy-particle induced e.a.sh. by the number  
of penetrating particles. The upper limit of the number of muons  $N_\mu$  in  
a photon-induced e.a.sh. and the spatial muon distribution are  
estimated for  $E_{\text{phot}} = 10^{10}$  ev and  $N = 10^7$  at sea level. The muons are  
assumed to be produced in  $\pi^\pm$  decay only, the  $\pi^\pm$  being the result of photo-  
nuclear interaction. Muon pair production is ignored.  
 $N_\mu(>E) \leq 0.8 \cdot 10^{-3} E_0/E$ . The spatial meson distribution at sea level

Card 1/2

Extensive air showers induced by ...

S/048/62/026/005/015/022  
B102/B104

is determined for mesons with  $E > 1 \cdot 10^{10}$  ev. The transverse momenta of the  $\pi^+$  produced are assumed to satisfy the law  $p_{\perp}^2 \exp[-(p_{\perp}/p_0)^2]$  with  $p_0 = 1 \cdot 10^8$  ev. The distribution curves were found to be similar for electron-photon and ordinary showers, the densities at axial distances between 10 and 100 m differ by a factor of  $\sim 100$ ; it is concluded that the muon density in photon-induced e.a.sh. will be  $\sim 1\%$  of that in ordinary showers with  $N \sim 1 \cdot 10^7$  at sea level and distances up to 100 m from the shower axis. An analysis of the relation between the number of recorded showers and that of recorded muons showed that of 126 showers with  $4 \cdot 10^6 < N \leq 2 \cdot 10^7$  all those which could have been photon-induced were recorded. This indicates a 75% probability that  $\alpha < 0.01$ . There are 2 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut yadernoy fiziki  
Moskovskogo gos. universiteta im. M. V. Lomonosova  
(Scientific Research Institute of Nuclear Physics of  
Moscow State University imeni M. V. Lomonosov)

Card 2/2

S. N.; KHRISTIANSEN, G. B.; ABROSIMOV, A. M.; KHRENOV, DMITRIYEV, V. A.  
S. N.; SOLOVYEV, K. I.; BELYAYEVA, M. F.; NECHIN, Yu. A.; VEDENEYEV, O. N.:  
S. N.; FOMIN, Yu. A.

Summary of the new data on EAS structure obtained with the aid of the complex  
equipment of Moscow State University.

Report submitted for the 8th Intl. Conf. on Cosmic Rays (IUPAP) Jaipur, India,  
2-14 Dec 1963

HANSEN, G. B.; ABROSIMOV, A. M.; KHRENOV, B. A.; ATRASHKEVICH, V. B.;  
BLOKH, G. V.; SOLOVYIEVA, V.I.; FOMIN, Yu. A.

Cosmic ray primary radiation of ultra high energy.

Submitted for the 8th Intl. Conf. on Cosmic Rays (IUPAP), Jaipur, India,  
Dec 1963



VERNOV, S.N.; KHRISTIANSSEN, G.B.; AMOSIMOV, A.T.; BELYAYEVA, I.F.;  
DMITRIYEV, V.A.; KULIKOV, G.V.; NECHIN, Yu.A.; SOLOV'YEVA, V.I.;  
KHRENOV, B.A.

Recent data on the study of extensive air showers by means of  
an elaborate setup. Izv. AN SSSR. Ser. fiz. 28 no.11:1886.  
1893 N '64. (MIRA 17:12)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo  
gosudarstvennogo universiteta.

7. 23402-65 ENT(1)/EWG(v)/FCC/EEC-4/EEC(t)/EWA(h) Po-4/Pe-5/Pq-4/Pae-2/PeB/P1-4  
 ACCESSION NR: AP5002095 GW/WS S/0048/64/028/012/1934/1941

AUTHOR: Khrstiansen, G. B.; Abrosimov, A. T.; Atrashkevich, V. B.;  
Kulikov, G. V.; Solov'yeva, V. I.; Pomin, Yu. A.; Khrenov, B. A.

TITLE: Primary cosmic radiation of superhigh energy

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 28, no. 12, 1964,  
 1934-1941

TOPIC TAGS: atmospheric shower, shower spectrum, primary energy  
 spectrum, cosmic ray, atomic number,  $\mu$  meson, cosmic ray diffusion,  
 magnetic field, magnetic rigidity, proton, nucleus, diffusion coeffi-  
 cient

ABSTRACT: The spectrum investigation of large atmospheric showers may  
 be made by means of the number of particles which is possible to study  
 using a complex large-scale facility. The spectrum of large atmospheric  
 showers near sea level changes its form sharply with the change in  
 the total number  $N$  of particles. The transition of cosmic radiation  
 from the shower spectrum to the primary energy spectrum is performed  
 using a model of the development of atmospheric showers. The develop-

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23402-65

ACCESSION NR: AP5002095

ment depends upon the number of particles and their atomic number  $A$ . These parameters were obtained by analyzing the fluctuations of  $\mu$ -meson flux measured in the complex facility. The distribution of the meson number depends upon the form of the primary energy spectrum, which is characterized by the exponent  $\gamma$ . Acceleration and diffusion of cosmic rays occur when both a change in the energy spectrum and a change in the composition of rays take place simultaneously. The diffusion of cosmic rays takes place in a magnetic field where the diffusion coefficient is specified by magnetic rigidity, which is equal to  $2\epsilon/300H$  for nuclei and  $\epsilon/300H$  for protons ( $\epsilon$  is the energy of a nucleon). A table in the original article contains the percentage of galactic cosmic radiation of various energies. This table shows that the increase of energy causes an increase of heavy nuclei in cosmic radiation of the Galaxy. A decrease in the percentage of light nuclei  $\alpha$  and  $L$  with the increase in energy is caused by the higher diffusion coefficient. The number of  $\mu$ -mesons computed theoretically agreed with experimental data up to  $10^{15}$  ev of the primary particles. At energies greater than  $10^{17}$  ev, the experimental data showed more protons and light nuclei than the theory purports. Orig. art. has: 4 figures, 2 tables, and 12 formulas. [EG]

Card 2/3

T 23402-65

ACCESSION NR: AP5002095

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: AA

NO REF SOV: 008

OTHER: 001

ATD PRESS: 3174

Card 3/3

YETOV, S.F.; KRISTINCHEN, G.B.; ABUSHEV, A.T.; ATRASHKEVICH, V.B.;  
BELYAYEVA, I.F.; VEDEYEV, O.V.; LITVINOV, V.A.; KULIKOV, G.V.;  
FEDIN, Yu.A.; SOLOV'YEVA, V.I.; SOLOV'YEV, K.I.; FOMIN, Yu.A.;  
KREMER, B.A.

Description of a modernized complex setup for studying extensive air showers. Izv. AN SSSR Ser. fiz. 28 no.12:2087-2092  
D '64 (NINA 18:2)

L 40709-65 EWG(j)/EWT(m)/FCC/T IJP(o)

ACCESSION NR: AP5012318

UR/0048/64/028/011/1886/1893

AUTHOR: Yernov, S. N.; Khristiansen, G. B.; Abrosimov, A. T.; Belyayeva, I. F.;  
Daitriyev, V. A.; Kulikov, G. V.; Nechin, Yu. A.; Solov'yeva, V. I.; Khrenov, B. A.

TITLE: New data on the study of broad atmospheric showers using a complex  
apparatus / Report of All-Union Meeting on Cosmic Rays Physics, held in Moscow  
from October 4 to 10, 1963

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 28, no. 11, 1964, 1886-1893

TOPIC TAGS: cosmic ray shower, nuclear particle, nuclear physics apparatus

ABSTRACT: Experiments are described that were conducted at Moscow State University  
on a complex apparatus for the study of broad atmospheric showers and the mu-  
meson component of cosmic rays. The apparatus gave simultaneous information on the  
electron-photon, mu-meson, and nuclear-active components of broad atmospheric  
showers in each individually recorded shower. Orig. art. has: 9 graphs, 3 tables.

ASSOCIATION: Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo  
gosudarstvennogo universiteta im. M. V. Lomonosova (Scientific Research Institute  
of Nuclear Physics, Moscow State University)

SUBMITTED: 00

ENCL: 00

SUB CODE: AA, NP

NO REF SOV: 003

OTHER: 006

JPRS

Card 1/2 p4

L 1887-66 EWT(1)/EWT(m)/FCC/T/EWA(h) LJP(c) GS/GW  
ACCESSION NR: AT5022828 UR/0000/65/000/000/0103/0110

AUTHOR: Vernov, S. N.; Solov'yeva, V. I.; Khrenov, B. A.; Khristiansen, G. B. 37  
26  
27

TITLE: Primary cosmic radiation in the ultrahigh energy range and extensive  
air showers 19

SOURCE: Vsesoyuznoye soveshchaniye po kosmofizicheskoyu napravleniyu issledo-  
vaniy kosmicheskikh luchey. Ist, Yakutsk, 1962. Kosmicheskiye luchy i problemy  
kosmofiziki (Cosmic rays and problems in cosmophysics); trudy soveschaniya.  
Novosibirsk, Redizdat Sib. otd. AN SSSR, 1965, 103-110

TOPIC TAGS: extensive air shower, mu meson, primary cosmic ray, cosmic radiation  
energy, astrophysic instrument 12

ABSTRACT: The device used at the MGU for studying extensive air showers (EAS)  
has yielded extensive experimental data pertaining to ultrahigh-energy primary  
cosmic radiation. The present report cites cumulative experimental data for  
1960-1961. The device consists of 18 points (arranged in a circle of 120 m  
radius) at which detectors of charged particle densities and mu-mesons are  
located (Fig. 1 of the Enclosure). A very valuable feature of the device is its  
ability to record high-energy mu-meson fluxes in an individual shower. The  
energy spectrum of primary cosmic radiation obtained is discussed. The  
Card 1/3

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ACCESSION NR: AT5022828

experimental data are used to determine the probability that pure electron-photon showers comprise a fraction  $\alpha$  of the total number of recorded showers  $\gamma$ :

$$P(\alpha n) \sim \sum_{n_i} \sum_{m=0}^{n_i} \frac{[\exp(-\alpha n_i)] (\alpha n_i)^m}{m!} (1 - e^{-\alpha n_i})^m,$$

where  $n_i$  is the number of EAS with a density of mu-mesons  $P_{\mu_i}^n$ ;  $P_{\mu_i}^y$  is the density of mu-mesons in pure electron-photon showers with the same number of particles  $N$  as in the observed EAS. Calculation shows that  $\alpha < 2 \times 10^{-3}$  with 90% probability. The upper limit for the fraction of primary quanta with energy of  $\sim 10^{16}$  ev is from  $4 \times 10^{-4}$  to  $10^{-4}$ . In conclusion, the isotropy of primary cosmic radiation of the highest energy that can be recorded by the device is discussed. Orig. art. has: 2 figures and 2 tables.

ASSOCIATION: Nauchno-issledovatel'skiy institut yadernoy fiziki MGU  
(Scientific Research Institute of Nuclear Physics, MGU)

SUBMITTED: 29Oct64

ENCL: 01

SUB CODE: AA

NO REF SOV: 006

OTHER: 006

Card 2/3



L 1887-66

**ACCESSION NR: AT5022828**

**ENCLOSURE: 01**



**Figure 1. Diagram of cosmic ray and air shower recording device.**

a - detectors of charged particle density; b - mu-meson detectors  
( $E \geq 6 \times 10^8$ )

**Card 3/3**

L 4528-66 ENT(m)/FCC/T IJP(c)

ACC NR: APS024832

SOURCE CODE: UR/004H/65/M29/009/1676/1681

AUTHOR: Vernov, S.M.; Khristiansen, G.B.; Abrosimov, A.T.; Atrashkevich, V.D.;  
Belyayeva, I.F.; Vedeneyev, O.V.; Kulikov, G.V.; Fomin, Yu. A.; Mechin, Yu. A.;  
Solov'yeva, V.I.; Khrenov, B.A.

ONG: none

TITLE: Investigations of fluctuations in the development of extensive air showers  
with a fixed total number of charged particles and a fixed total number of muons /Re-  
port, All-Union Conference on Cosmic Ray Physics held at Apatity 24-31 August 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 9, 1965, 1676-1681

TOPIC TAGS: cosmic ray shower, muon, charged particle, extensive air shower, particle  
distributive particle distribution

ABSTRACT: The authors have employed the modernized installation at Moscow State Uni-  
versity, described elsewhere (S.M.Vernov et al., Izv. AN SSSR Ser. fiz., 28, 2087,  
1964), to investigate the simultaneous distribution of total number  $N$  of charged par-  
ticles, total number  $M$  of muons, and age parameter  $S$  in extensive air showers. Show-  
ers were selected for which the zenith angle of the axis was less than  $30^\circ$ .  $N$  was de-  
termined from the number of muons recorded by the muon detector and the perpendicular  
distance of the muon detector from the shower axis with the aid of the known lateral  
distribution of muons. The relative error in determining  $N$  did not exceed 35 %. The

Card 1/2

L 4528-66

ACC NR: AP5024632

error in determining S was estimated to be 0.02 by processing "artificial" showers of known age, calculated by Monte Carlo methods. The data presented were derived from some 300 showers with total numbers of charged particles ranging from  $10^5$  to  $4 \times 10^6$ . Histograms are given showing the distribution of showers with respect to N with fixed M, with respect to M with fixed N, with respect to S with fixed N, and with respect to S with fixed M, and scatter plots are given for N versus S with fixed M and for M versus S with fixed N. The correlation coefficient of S with M for fixed N ranged between 0.62 and 0.72; the correlation coefficient of S with N for fixed M was - 0.67. Orig. art. has: 10 formulas, 4 figures, and 1 table.

SUB CODE: NP/ SUBM DATE: 00/

ORIG REF: 006/ OTM REF: 001

PC

Card 22

VERNOV, S.N.; KHRISTIANOV, N.S.; ANTONOV, V.I.; ALEKSEYEV, V.I.;  
BELYAYEVA, I.P.; KOLIKOV, N.S.; KOLYVANOVA, V.I.; PERIN, T.S.;  
KURENCOV, B.A.

Ultrahigh-energy primary cosmic radiation according to data on  
extensive air showers. Izv. AN SSSR Ser. Fiz. 29 no.10:1876-1880  
O 1965. (MIRA 18:10)

1. Nauchno-Issledovatel'skiy Institut yadernoy fiziki Moskovskogo  
gosudarstvennogo universiteta im. M.V.Lomonosova.

ACC NR: A17007081

SOURCE CODE: UR/0048/66/030/010/1685/1689

AUTHOR: Vernov, S. N.; Kristiansen, G. B.; Abrosimov, A. T.; Atrashkevich, V. B.; Belyayeva, I. P.; Vedonoyov, O. V.; Kulikov, G. B.; Nachin, Yu. A.; Solov'yeva, V. I.; Fomin, Yu. A.; Khrenov, B. A.

ORG: none

TITLE: Phenomenological characteristics of broad atmospheric showers with a fixed number of  $\mu$ -mesons and electrons /Paper presented at the All-Union Conference on Cosmic Radiation Physics, Moscow, 15-20 Nov 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 10, 1966, 1685-1689

TOPIC TAGS: mu meson, cosmic radiation

SUB CODE: 20

ABSTRACT: In an earlier work by Vernov et al (Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, 29, 1676, 1965), results obtained in a study at an installation of Moscow State University on broad atmospheric showers with zenith angles of 0-30° were reported. These results included the distribution of showers with a fixed number of electrons  $N_e$  with respect to the number of high-energy mesons  $N_\mu$  and the age parameter  $S$ , distribution of showers with a fixed  $N_\mu$  with respect to  $N_e$  and  $S$ , and the coefficients of the correlation between  $S$  and the fluxes of electrons and  $\mu$ -mesons. In the work reported in this instance, the same relations were determined for broad atmospheric showers with zenith angles of 30-45°. The fluctuations of  $N_\mu$ ,  $S$ , and  $N_e$ , observed for an effective atmospheric depth of 1240 g/cm<sup>2</sup>, were the same as those for vertical showers established in the earlier work. To determine the differences due to an increase in

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ACC NR: AP7007081

the effective atmospheric depth of  $200 \text{ g/cm}^2$ , calculations must be carried out with greater statistical precision. When results of the theoretical calculations on characteristics of broad atmospheric showers at  $1240 \text{ g/cm}^2$  become available, the experimental data reported will be useful for the determination of the composition of primary cosmic radiation in the superhigh-energy range. (SFS: 39,858)

Orig. art. has: 3 figures, 2 formulas and 1 table.

Card 2/2

SOLOV'YEVA, V.K., kand.sel'skokhoyaystvennykh nauk

New types of edible podded peas. Agrobiologiya no.5:124-126 8-0  
'58. (MIRA 11:11)

1. Gribovskaya ovoshchnaya selektsionnaya opytnaya stantsiya.  
(Peas--Varieties)

SOLOV'YEVA, V.K.

New "Svoboda 10" variety of green peas. Kons. 1 ov. prom. 17  
no.8:33-34 Ag '62. (MIRA 17:1)

1. Gribovskaya ovoshchnaya selektsionnaya stantsiya.



PHASE I BOOK EXPLOITATION SOV/3727

Raschireniye vozmozhnostey primeneniya plastmass v konstruktsionnykh mashin (Widening the Possibilities for Using Plastics in Machinery Components) Moscow, Mashiz, 1959. 183 p. 6,000 copies printed.

Reviewers: M.V. Popov, Engineer, and P.Z. Petukhov, Doctor of Technical Sciences; Ed.: N.I. Sudlov, Engineer; Tech. Ed.: M.A. Zaslavskiy, Chief Engineer; Elec. Ed.: (Ural-Siberian Division, Mashiz); T.N. Smorod, Engineer.

PURPOSE: The book is intended for engineers and scientists engaged in the study and manufacture of plastics and plastic machine parts.

COVERAGE: The chapters of this book were written by different authors indicated in parentheses after each chapter in the table of contents. The chapter on the use of plastics in non-Soviet countries includes data on the stock works in Czechoslovakia. A number of Soviet manufacturing establishments are mentioned. Equipment using plastic parts is described and evaluated. Considerable attention is paid to the use of plastics for critical materials in types of equipment subjected to wear or to corrosive, abrasive and chemical influences. Broad designations, properties and uses of a number of Soviet-made plastic materials are given. It is thus a survey of modern Soviet plastic materials grouped according to their specific application in industry. The authors rely heavily upon the experience of Ural plants. Especially they specialize in electrical apparatus, automotive equipment and measuring instruments. No personalities are mentioned. There are 31 references: 31 Soviet, and 5 German.

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SOLOV'YEVA, V.K.; KISELEVA, V.M.

Facing furniture with planed veneer of larch. Der. prom. 13  
no.4:15-16 Ap '64. (MIRA 17:4)

1. Sverdlovskiy nauchno-issledovatel'skiy institut pererabotki  
drevesiny.

SOLOV'YEVA, Vera Mikhaylovna

Of Application of Soviet (Kampolona)

Dissertation for candidate of Medical Science degree. Chair of the  
Department of Therapeutical (Pedfaka); (head, Prof. Ye. Yu. Makhlin),  
Saratov Medical Institute, 1948

*\* Security - therapy*

SOLOV'YEVA, V. M.

Intravenous injection of novocain solution in hypertension.  
Klin. med., Moskva 29 no.8:83 Aug 1951. (CML 20:11)

1. Of the Faculty Therapeutic Clinic (Director -- Prof. Ye.  
Yu. Makhlin), Pediatric Faculty, Saratov Medical Institute.

SOLOV'YEVA, V.M., kandidat meditsinskikh nauk.

Discussion on L.K.Poy's article "Novocaine in the treatment of hypertension." Klin.med. 34 no.4:82-83 Apr '53. (MLBA 6:7)

1. Kafedra gosital'noy terapii Starovskogo meditsinskogo instituta.  
(Hypertension) (Novocaine)

SOLOV'YEVA, V.M., kand. biol. nauk

Studying some methods of producing tobacco and makhorka  
hybrids with the characteristics of two paternal forms.  
Agrobiologiya no.2:200-205 Mr-Apr '65. (MIRA 18:11)

1. Krymskaya tabachnaya opytnaya stantsiya, Yalta.

"The use of flying the flag is the symbol of the nation and in various historical periods of the world." (Source: Journal of Agricultural Science, Vol. 1, No. 1, 1961, p. 100. (Reprinted for the purpose of the book 'The History of the World').

1. Journal of Agricultural Science, Vol. 1, No. 1, 1961

SHVABE, A.K., kand. sel'skokhozyaystvennykh nauk; SOLOV'YEVA, V.N.,  
kand. biologicheskikh nauk

Special aspects of using biopsy in studying the mammary gland  
of cows [with summary in English]. Izv. TSMA no.4:214-220  
'60. (MIRA 13:9)

(Biopsy) (Mammary glands) (Cows—Anatomy)



SOLOV'YEVA, V. N.; KARDASHOV, D. A.; MASHINA, M. A.; MURINA, I. S.  
MIKHAYLOVA, L. A.

Phenol-rubber adhesive of higher elasticity. Plast. massy  
no.11:44-46 '62. (MIRA 16:1)

(Adhesives) (Phenol condensation products)

ACCESSION NR:AP4013433

S/0057/64/034/002/0374/0376

AUTHOR: Vishnevetskiy, M.Z.; Kondrat'yev, B.V.; Solov'yeva, V.N.

TITLE: Concerning phase velocity reduction in a helix waveguide

SOURCE: Zhurnal tekhn.fiz., v.34, no.2, 1964, 374-376

TOPIC TAGS: waveguide, helical waveguide, helix waveguide, phase velocity, phase velocity reduction, dispersion

ABSTRACT: The phase velocity in a helix waveguide is investigated. The waveguide is constructed in the form of a coaxial cable with an inner helical conductor and an outer cylindrical conductor. To investigate the effect of the presence of the outer cylindrical conductor on the phase velocity, the inner helical conductor is treated as an anisotropically conducting cylinder. The dispersion equation is written, and it is found that the presence of the outer conductor reduces the phase velocity and that the dispersion of the symmetric wave remains normal for all values of the radius of the outer conductor. The effect of the diameter (or width) of the wire (or strip) of which the helix is wound is investigated with the aid of a dispersion equation derived by V.P.Shestopalov and B.V.Kondrat'yev (ZhTF 29, No.12,

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ACCESSION NR: AP4013433

1434,1959) from average boundary conditions on the helix. It is found that the velocity of the symmetric wave increases (particularly at the higher frequencies) with decreasing separation between the turns of the helix, i.e., with increasing ratio of wire diameter to helix pitch. Both calculations are extended to the first asymmetric wave. The propagation velocities of the right and left hand helical waves are very nearly the same. Orig.art.has: 6 formulas and 3 figures.

ASSOCIATION: Khar'kovskiy gosuniversitet im.A.M.Gor'kogo (Kharkov State University)

SUBMITTED: 18May63

DATE ACQ: 26Feb64

ENCL: 00

SUB CODE: PH

NR REF SOV: 004

OTHER: 000

2/2  
Card

ABRITALIN, V.I.; SOLOV'Yeva, V.N.; SHEBERSTOV, V.I.

Studying the developing properties of 1-phenyl-e-pyrazolidone and its derivatives. Part 1: Superadditive effect of phenidone with various developing substances. Zhur. nauch. i prikl. fot. i kin. 9 no.5:333-336 S-O '64.

(NIMA 17:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy kinofotoinstitut (NIKFI).

4 Influence of a light surround on colour-discrimination. (G. N. Rantian and V. P. Solovyova (*C. R. Acad. Sci. U.R.S.S.*, 1954, 10, 313-316).—Chromatically discrimination all-pure for one normal observer at 6 points in one plane of brightness-luminance space were determined using 4° test fields and a 60° surround which could be dark, or illuminated with light of the same or different colour and brightness as the test field. The best discrimination was found when the surround matched the test field, and the worst when it differed in both colour and brightness. G. S. Huxford, A.

USSR/Biophysics

Card 1/1

Authors : Rautman, G. N. and Solov'eva, V. P.

Title : Effect of brightness level on the sharpness of color discrimination

Periodical : Dokl. AN SSSR 95, 6, 1189 - 1192, 21 Apr 1954

Abstract : Describes an experimental determination and study of thresholds of color discrimination. The experiment has been performed with the help of a tube-photometer, two colorimeters coupled together, and specially arranged revolving discs whose color brightness and size could be regulated. Diagrams.

Institution : ....

Submitted : 11 Feb 1954

*Solov'yeva, V.P.* SOV/96-58-5-9/27

AUTHORS: Korovin, V.A., Engineer, Kostrinkin, Yu.M., Candidate of Technical Sciences and Taratuta, V.A., ~~Solov'yeva, V.P.,~~ Engineers

TITLE: A Spectro-photometric Method of Controlling the Water Conditions in Thermal-power Equipment (Spektrofotometricheskii metod kontrolya vodnogo rezhima v teplosilovom khozyaystve)

PERIODICAL: Teploenergetika, 1958, Nr 5, pp 46 - 49 (USSR)

ABSTRACT: At present two methods are used to determine the salt content of steam and condensate; one is by ionic analysis and the other by measurement of electrical conductivity. The disadvantages of these methods are described and the use of spectro-photometer is recommended. The technique for the determination of elements such as sodium, potassium and calcium is indicated in general terms. The article then describes a simple flame spectro-photometer installation assembled at the All-Union Thermo-technical Institute. It can be made up in any power-station laboratory. The equipment is illustrated diagrammatically in Figure 1; its construction and method of operation are described. It was used to determine sodium in solution at concentrations ranging

Card 1/2

SOV/96-58-5-9/27  
A Spectro-photometric Method of Controlling the Water Conditions in  
Thermal-power Equipment

from 0.1 mg/litre to some hundreds of milligrams per litre. A special three-channel burner was used; it is illustrated in Figure 2. Detailed operating instructions for the instrument are then given, including calibration with standard solution and the method of working out the results. The entire process of determining sodium content in samples, for example, in acid concentrations or in other liquids, can be completed in 5 - 10 minutes, including the time necessary to plot the graphs. The accuracy is of the order of  $\pm 5\%$ , similar to that of a good photo-calorimeter. There are 2 figures and 4 Soviet references.

ASSOCIATION: VTI

Card 2/2

1. Heat engines--Water supply
2. Feed water--Purification
3. Feed water--Analysis
4. Spectrophotometers--Applications



1. TAVADZE, P.G.; BOLOV'YEVA, V.P.
  2. USSR (610)
  4. Grapes
  7. Change in amylase activity in relation to the age of grape leaves (in Georgian with Russian summary), P.G. Tavadze, V.P. Bolov'yeva, Trudy Inst.vin. AN Gruz.SSSR 7, 1951.
9. Monthly List of Russian Accessions, Library of Congress, APRIL 1953. Unclassified.

SOLOV'YEVA, V.P. (Moskva)

Materials on the physiological principles involved in the labor  
and rest cycle of brain workers. Olg.truda i prof.zab. 1 no.1:  
38-44 Ja-V '57. (MLRA 10:6)

1. Laboratoriya fiziologii truda Instituta gigiyeny truda i  
profzabolevaniy Akademii meditsinskikh nauk SSSR.  
(PROOFREADING--HYGIENIC ASPECTS)

ZOLINA, Z.M.; PODOBA, Ye.V.; SOLOV'YEVA, V.P. (Moskva)

Study of working capacity in the operation of various types  
of conveyers. Gig. truda i prof. zab. 4 no.11:45-49 N '60.  
(MIRA 15:3)

1. Institut gigiyeny truda i professional'nykh zabolevaniy  
AMN SSSR.

(CONVEYING MACHINERY—HYGIENIC ASPECTS)  
(FATIGUE)

SOLOV'YEVA, V. P.; PODOBA, Ye. V. (Moskva)

Energy spent by motormen operating a "Druzhba" No. 1 gasoline-  
driven saw. Gig. truda i prof. zab. 5 no.7:49 J1 '61.  
(MIRA 15:7)

1. Institut gigiyeny truda i professional'nykh zabolevaniy  
AMN SSSR.

(LUMBERMEN) (FATIGUE)

MUCHNIK, S.R., prof.; SKORODINSKAYA, V.V., starshiy nauchnyy sotrudnik;  
SOLOV'YEVA, V.P.; SHCHASTNAYA, N.E.

State of certain functional systems of the organism in high  
myopia. Oft. zhur. 17 no.1:32-38 '62. (MIRA 15:3)

1. Iz Ukrainskogo nauchno-issledovatel'skogo eksperimental'nogo  
instituta glaznykh bolezney i tkanevoy terapii imeni akademika  
V.P. Filatova (dir. - prof. N.A. Puchkovskaya).  
(MYOPIA)

SOLOV'YEVA, V.P.; GAMBASHIDZE, G.M. (Moskva)

Physiological basis of the schedule of work and rest in regular work on the night shift. Gig. truda i prof. zab. 4 no. 7:17-23  
Jl '60. (MIRA 13:8)

1. Institut gigiyeny truda i profzabolevaniy AMN SSSR.  
(NIGHT WORK)

VODOLAZSKY, L.A., PODORA, YE. V., and SOLOVYEVA, V.P.

Institute of Labor Hygiene and Professional Diseases,  
Academy of Medical Sciences USSR, Moscow - "Further  
development of the method of recording of electro-  
cardiograms and electromyograms of a worker during  
work in the factory" (17)

Report to be submitted for the 4th Intl. Conf. on  
Medical Electronics, New York, N.Y., 16-21 July 1961

LETAVET, A.A., prof., red.; KOSILOV, S.A., prof., red.; ZOLINA, Z.M.,  
kand. biol. nauk, red.; KRAPIVINTSEVA, S.I., kand. med. nauk,  
red.; PODoba, Ye.V., kand. med. nauk, red.; SOLOV'YEVA, V.P.,  
kand. med. nauk, red.; ALTUKHOV, G.V., red.; BALDINA, N.F.,  
tekhn. red.

[Research on the physiology of work processes] Issledovaniia po  
fiziologii trudovykh protsessov. Pod obshchei red. A.A. Letaveta.  
Moskva, Medgiz, 1962. 279 p. (MIRA 16:1)

1. Akademiya meditsinskikh nauk SSSR, Moscow. Deystvitel'nyy  
chlen Akademii meditsinskikh nauk SSSR (for Letavet).  
(WORK)



SOLOV'YOVA V. P.

22659 Solov'yova V. P. Vliyaniye Nekotorykh Narkoticheskikh I Benzina  
NA Katalazu Krovi. Sbornik Nauch. Trudov Bashkir. Med. In-Ta Im. 15--  
Letiya Vksm, T. IX, 1949, S. 19-22.

So: Letopis ', No. 30, 1949

SEE: SUSLINA, V. G.



Disquisition: "The Mechanical Behavior of the ... of the ...  
... of the ... of the ... of the ... of the ...  
Inst, Moscow, 1962. Referativnyi Zhurnal—Zhurnal, Moscow, No 6, Apr 54.

CC: ... 10 Nov 1954

SOLOV'YEVA, V.P., kand.med.nauk (Odessa)

Effect of aloe extract on blood chemistry in normal and pathological states. Vrach.delo no.1:93 Ja '58. (MIRA 11:3)

1. Ukrainskiy nauchno-issledovatel'skiy institut glaznykh bolezney i tkanevoy terapii imeni akad. V.P.Filatova.  
(ALOE) (GLUTATHIONE)

SOLOV'YEVA, V.P., kand.med.nauk (Odessa)

Use of tissue extracts after freezing them. Vrach.delo no.8:875-876  
Ag '59. (MIRA 12:12)

1. Ukrainskiy nauchno-issledovatel'skiy eksperimental'nyy institut  
glaznykh bolezney i tkanevoy terapii imeni akademika V.P. Filatova.  
(TISSUE EXTRACTS)

CHIKALO, I.I.; SOLOV'YEVA, V.P.

Enzymatic activity of the intestinal juice of dogs in parenteral  
administration of aloe extract. Uch.zap. ~~UEIG~~ 5:250-257 '62  
(MIRA 16:11)

\*

SOLOV'YEVA, V.P.; MANTURO, N.A.

Biological activity of some mixtures of tissue preparations.  
Uch.zap. UEIGB 5:302-306 '62 (MIRA 16:11)

\*

VCDOLAZKIY, L.A.; POBORA, Ye.V.; SOLOV'YEVA, V.P.

Use of the TEK-1 tele-electrocardiograph in studies of the  
physiology of work. Trudy VNIIMIO no.3:146-147 '63  
(MIRA 18:2)



SOLOV'YEVA, V.P., kand.med.nauk (Odessa)

Effect of tissue implantations on the biochemical indices of the  
blood of rabbits with reproduced liver diseases. Vrach. delo no.3:  
22-26 Mr '64. (MIRA 17:4)

1. Ukrainskiy eksperimental'nyy institut glaznykh bolezney i  
tkanевой terapii imeni akademika V.P.Filatova.

SOLOV'YEV, V.P.; GARNITSKAYA, L.Ye.

Biological activity of preparations from maral antlers preserved  
at a low temperature. Apt. solo 13 no.1:48-53 Ja-F '64.

(MIRA 17:4)

1. Ukrainskiy eksperimental'nyy institut glaznykh bolezney i  
kinevoy terapii imeni V.P.Filatova, Odessa.

L 54713-65

ACCESSION-NR: AP5018132

UR/0219/64/058/011/0070/0072

AUTHOR: Solov'yeva, V. P.; Manturo, N. A.

TITLE: Effect of preparation of the organism by preserved tissue grafts on its reaction to adrenalin administration

SOURCE: Byulleten' eksperimental'noy biologii i meditsiny, v. 58, no. 11, 1964, 70-72

TOPIC TAGS: surgery, drug treatment, experiment animal, cardiology

ABSTRACT: Grafts of heteroskin to rabbits did not produce any changes in arterial blood pressure. On injection to rabbits with heterotissue grafts (0.5 g skin) of 0.00001 g adrenalin per 1 kg body weight, the rise in arterial blood pressure was greater and more prolonged than in control rabbits without grafts. A drop in the blood pressure below normal following the initial rise was observed in control rabbits after administration of adrenalin, but not in the experimental animals. The increase in the length of the period of raised blood pressure persisted to the 17-20th

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L 54713-65

ACCESSION NR: AP5018132

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day after the graft, with the length of this period showing a maximum (17 min) on the 10th day. The effect appeared initially on the 5th day after the graft. One may assume that as a result of increased cholinesterase activity produced by the tissue graft there was a delay in the transmission of reflex impulses to the heart through the vagus; in consequence thereof, the rhythm of the heart was not slowed down sufficiently when the arterial pressure rose. Orig. art. has: 1 graph.

ASSOCIATION: Ukrainskiy eksperimental'nyy institut glaznykh bolezney i tkanevoy terapii im. V. P. Filatova, Odessa (Ukrainian Experimental Institute of Eye Diseases and Tissue Therapy)

SUBMITTED: 09Aug63

ENCL: 00

SUB CODE: LS

NR REF SOV: 005

OTHER: 000

JPRS

Card 2/2